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## IS THE CRESCENT FORM OF VENUS VISIBLE TO THE NAKED EYE?

Joseph Offord has recently published in the *Journal of the Royal Asiatic Society* an interesting paper on the deity of the crescent *Venus* in ancient western Asia, in which he upholds the thesis that the crescent form of *Venus* was well known to the early inhabitants of Mesopotamia. He quotes from cuneiform literature as follows:

"If on the right horn of *Venus* a star is visible, you will have  
good crops in the land;  
When upon the right horn of *Venus* a star is not visible, the land  
will bear many misfortunes."

There are other passages referring to the horns of *Venus*.

I find it difficult to believe that any one has ever seen the crescent form of *Venus* without telescopic aid, and I am inclined to think the explanation of the early references to the horns of *Venus* rests upon a lucky guess, as in the case of the two little satellites of *Mars*. Dean Swift described the latter quite accurately, as is well known, and his description undoubtedly rests upon a lucky guess. The ancients had the crescent form of our Moon before them every month as an example. *Venus* is the object next in brightness to the Moon, and of the many guesses which were probably made as to the form of *Venus*, the crescent would probably be the favorite and prevailing one.

The clear air of Mesopotamia has been suggested as of great assistance to the naked eye in seeing the crescent form of *Venus*. I am inclined to think that the greater brilliancy of the planet resulting from abnormally pure atmosphere would be a hindrance to the eye, and that the chances for seeing *Venus* as a crescent would be improved if the brilliancy were reduced by a thin absorbing medium of cloud or haze. Likewise the extreme steadiness of the air, which the observers in Mesopotamia and elsewhere were undoubtedly favored with at times, does not seem to me to be a vital factor: the twinkling effect when one sees *Venus* in a telescope under merely average atmospheric conditions involves motions of

*Venus* which are only a minute fraction of the angular diameter of the planet's image.

Even when *Venus* is exactly between the Earth and the Sun, and with the Earth near the perihelion, the angular diameter of *Venus* is only a few seconds greater than one minute of arc, and at such times *Venus* can not be seen at all by the naked eye. When the diameter of *Venus* is a minute of arc, and even somewhat less than a minute of arc, the planet is always close to the line joining the Earth and the Sun, and therefore must be looked for in a brilliant glare of sunlight. What is the advantage of a sky of Mesopotamian purity under such conditions? When the planet is far enough from the Sun in angular distance to let it be seen in the dark night sky, the angular diameter of the planet is always a great deal less than one minute of arc, perhaps always less than a half minute of arc. I think that the experiments with the human eye are conclusively in favor of the inability of the eye to define the form of a brilliant light source under those conditions.

For the reasons quoted above, I am inclined to attribute the ancient description of *Venus* as a crescent to pure lucky guess and coincidence, probably made under the influence of a crescent Moon.

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#### THE TOTAL SOLAR ECLIPSE OF JUNE 8, 1918.

The total eclipse of the Sun due to occur in the United States on the afternoon of June 8, 1918, promises to be an interesting event. The shadow cast by the Moon, traveling southeasterly, is due to enter the coast of the state of Washington at latitude  $+46^{\circ} 50'$  at 2<sup>h</sup> 55<sup>m</sup> P. M., Pacific Standard Time. It will pass over Heppner and Baker City, Oregon; Hailey and Montpelier, Idaho; Rock Springs, Wyoming; Steamboat Springs, Central City, Golden and Denver, Colorado; Lakin and Ashland, Kansas; Enid, Oklahoma; Jackson, Mississippi; Orlando, Florida; and end at sunset amongst the Bahama Islands.